



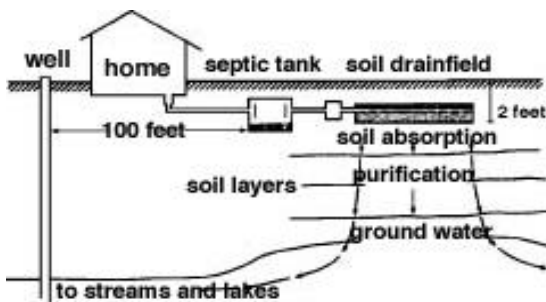
County of San Diego

Department of Environmental Health

Land and Water Quality Division

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On-site Wastewater Systems (Septic Systems): Permitting Process and Design Criteria



This document describes how on-site wastewater systems (OSWS) are reviewed and permits issued in San Diego County. The document also summarizes key design criteria for these systems. This document relies on and should be read together with the County's "On-site Wastewater System Groundwater Policy."

Persons seeking OSWS permits from the County should also review Chapter 3 [Septic Tanks and Seepage Pits] of Division 8 of Title 6 of the County Code of Regulatory Ordinances (County Code sections 68.301 et seq.), and applicable grading, building, and land use rules for the relevant municipal jurisdiction.

State, County, and City Roles

State / County Coordination

On-site wastewater systems discharge pollutants to ground water, and therefore are regulated by the state Water Code. Water Code section 13282 allows Regional Water Quality Control Boards to authorize a local public agency to issue permits for and to regulate OSWS "to ensure that systems are adequately designed, located, sized, spaced, constructed and maintained." The RWQCB with jurisdiction over San Diego County have authorized the County of San Diego, Department of Environmental Health (County DEH) to issue certain OSWS permits throughout the County including within incorporated cities. No city within San Diego County is authorized to issue these permits.

The RWQCB has imposed conditions and restrictions on the County's permit program. The County is authorized to issue permits for conventional OSWS—i.e., for septic tank and leach line and seepage pit systems—anywhere in the County. The County can issue permits for mound systems in the Valley Center area only. The County is not

authorized at present to issue permits for any other kind of unconventional OSWS that will have a subsurface discharge. The County is considering seeking such authorization. However, at present, persons seeking discharge permits for types of OSWS that the County is not authorized to permit must apply directly to the RWQCB for a state permit.

The Department of Environmental Health (DEH) enforces the Regional Water Quality Control Board (RWQCB), Region 9 requirements of maintaining at least a five-foot separation between the bottom of the OSWS disposal point and the highest anticipated groundwater level. Projects within the Colorado Regional Water Quality Control Board, Region 7, located east of the coastal mountains (desert), are subject to greater separation requirements, due to the extreme permeability and transmissibility of some desert basin soils.

The goal of DEH's OSWS program is to ensure that installed on-site sewage disposal systems will last the life of the dwellings they serve, and not cause any public exposure to surfacing sewage or any contamination of groundwater or surface waters. The County concurs with the RWQCB that the separation requirements the RWQCB has imposed are appropriate minimum requirements, necessary to protect groundwater quality and public health whenever septic tanks and leach lines or seepage pits are used as an OSWS. In addition, as noted above, these requirements are state-imposed conditions on the state's authorization for the County to issue OSWS permits locally. These restrictions cannot be modified by the County on a case-by-case basis, and must be rigorously implemented. The County's "On-site Wastewater System Groundwater Policy" describes in detail how the County ensures that these state-imposed requirements are met.

The County is now exploring how alternative types of OSWS known as Onsite Sewage Treatment Systems (OSTS) might be used in circumstances where a five-foot separation from ground water cannot be demonstrated. Pursuant to Water Code section 13291, the state is also developing further regulations that will apply to OSWS statewide. These anticipated state regulations may not be in place until 2004 or later. No completion date can be estimated yet for the County's review of alternative OSWS/OSTS. However, changes in this regulatory program may require review under CEQA, and will require coordination with the San Diego RWQCB.

County DEH / Local Land Use Agency Coordination

County DEH OSWS review procedures provide documents that applicants may need to take to land use agencies to secure other required local permits. County DEH also reviews plans submitted to these agencies to ensure that an OSWS will match up with the project to be constructed. The fundamental point that persons seeking OSWS permits must remember is that the County DEH OSWS permit process and local (including County) land use approval and permitting processes *are separate processes*. While they are coordinated to some extent, a County DEH OSWS permit or related approval is *never* a substitute for a required local grading, land use or building permit. Similarly, no local land use approval or permit (e.g., approval of a subdivision map or lot split or boundary adjustment, even after preliminary septic system review by DEH), is a substitute for a County DEH OSWS permit, or a guarantee that such a permit can be issued.

System Design Considerations

The most common type of OSWS found in San Diego County consists of a septic tank connected to leach lines. Variations of this system may include a septic tank connected to either a horizontal or vertical seepage pit. In some applications, the disposal field is at a higher elevation than the building site. In this instance a pressure-system is used to deliver the sewage to a standard disposal field where it is distributed by gravity flow. All of these examples would be considered a “conventional” onsite wastewater system because no further sewage treatment is used between the septic tank and the disposal field. In all cases, the sewage effluent is discharged below the ground surface, and is digested by bacteria in unsaturated soil zones for treatment of the sewage underground. These systems are designed to operate in all weather conditions with minimal maintenance, other than periodic septic tank pumping to remove sludge from the septic tank.

The size and type of OSWS needed for a particular building project will be a function of the following factors:

<u>Soil Permeability:</u>	Permeability determines the degree to which soil can accept sewage discharge over a period of time. Permeability is measured by percolation rate, in minutes per inch (MPI).
<u>Unsaturated Soil Interval:</u>	The distance between the bottom of the OSWS leach field trenches and the highest anticipated groundwater level or the shallowest impervious subsurface layer at a site.
<u>Peak Daily Flow:</u>	The anticipated peak sewage flow described in gallons per day. In many cases the number of bedrooms for a proposed home is used as an indicator of peak daily flow.
<u>Net Usable Land Area:</u>	The area available that meets all setback requirements to structures, easements, watercourses, or other geologic limiting factors for the design of an OSWS

Some sites are not acceptable for conventional OSWS based on low soil permeability, regardless of the unsaturated soil interval available at the site.

All conventional OSWS in San Diego will require at least 5 feet of unsaturated soil between the bottom of the sewage disposal system and the highest anticipated groundwater level for the site. Depth to groundwater varies tremendously with the amount of rainfall for many areas in San Diego County. Therefore, the highest anticipated groundwater levels must be established for any OSWS design in order to meet this separation requirement. Details are provided in the County’s “On-site Wastewater System Groundwater Policy.”

At sites affected by a shallow impervious layer of rock or clay, a minimum five-foot unsaturated soil interval is required between the bottom of the disposal system and the shallowest impervious layer.

The net useable land area required for an OSWS will usually depend primarily on soil permeability and peak daily flow. Details on set back requirements and net useable land areas requirements are provided below.

The Permit Process

“Certifications” are not OSWS permits

The process for obtaining an OSWS permit for development on a legal lot in the County of San Diego is described in this section. This process must be completed even if a lot has previously been “certified” by the County for a septic system. Typically, any such prior certification will be noted in land use records, e.g., through a map or plan notation that the lot is “approved” or “certified” for a septic system, or in a separate County-issued “certificate of compliance”. These notes and certificates may also state conditions for an acceptable OSWS, such as a minimum required leach line length. *No matter how detailed and final they appear to be, these map and plan notations and certificates of compliance are not OSWS permits, and they do not assure that an OSWS permit can be issued.*

There are several reasons that prior County certifications as part of the land use process do not ensure that an OSWS permit will be issued. First, County DEH can only issue OSWS permits as authorized by the RWQCB. That authorization requires completion of the kind of process described in this section. Second, site characterization work and analysis performed to support prior County certifications may have been the best that could have been done at the time (e.g., in a period of below normal rainfall), but may nevertheless be inadequate to support an OSWS permit. Third, new information may have come to light since a certification was issued, due to measurements taken on or near the site under different rainfall conditions. This is more likely to be the case for older certifications. Fourth, these certifications are not based on detailed project and OSWS designs and layout plans. Certification of a lot for a septic system is not the same thing as approval of a specific system, at a specific location, for a specific project, on that lot. Finally, these certifications provide no legal entitlement. Even if a certification was construed as a permit to construct an OSWS, that permit would expire after one year unless the system was actually constructed, inspected, and given final approval.

Certifications, while not a guarantee that an OSWS permit will be issued, may still be relevant at many sites. This is more likely when the information relied on for the certification is recent, of high quality, and was collected during a normal average rainfall year.

Steps in the permitting process

The County DEH OSWS permitting process includes the steps set out below.

1. If a percolation test is needed, the applicant must submit a percolation test and design as performed by a registered civil engineer, registered geologist or

registered environmental health specialist, certified by DEH for testing within San Diego County, for County DEH approval. In some cases, a new percolation test may not be needed, e.g., if the County certified a prior test during the subdivision or lot split process, and more recent information raises no new concerns or issues.

A percolation test may be required when:

- No previous County DEH certification was provided for the lot or parcel;
- The previous certification was issued without a percolation test;
- Grading or other soil disturbance has occurred in the proposed septic system location;
- The system is being shifted out of the previously tested area; or
- A disposal system other than the system previously considered is being proposed.

DEH approval of a percolation test design expires after one year, however the test data remains valid and may be used later to design and size an OSWS for project.

2. With percolation test data and other data in hand, the applicant must develop and submit a Layout Design for the proposed building project and specific OSWS, for County DEH review. The Layout Design must take percolation test data and this guidance into account. See below, "The Layout Design" for additional information on submission requirements.
3. After review, if it appears likely that the proposed OSWS can be permitted at the site, County DEH will provide an approval for the Layout Design. The County may require additional testing before providing this approval. In some cases, this additional testing will include depth to groundwater measurements during a normal average rainfall year. This may delay County DEH approval for a year or more. In some cases, DEH may conclude that a conventional OSWS cannot be safely used on the lot at issues. Because of the potential for delays or disapproval, DEH recommends that applicants submit a Layout Design and obtain an approval before incurring costs for detailed building plans and architectural fees.

The approved layout will state whether a field check of completed grading by County DEH is required. The Approval Sheet expires after one year.

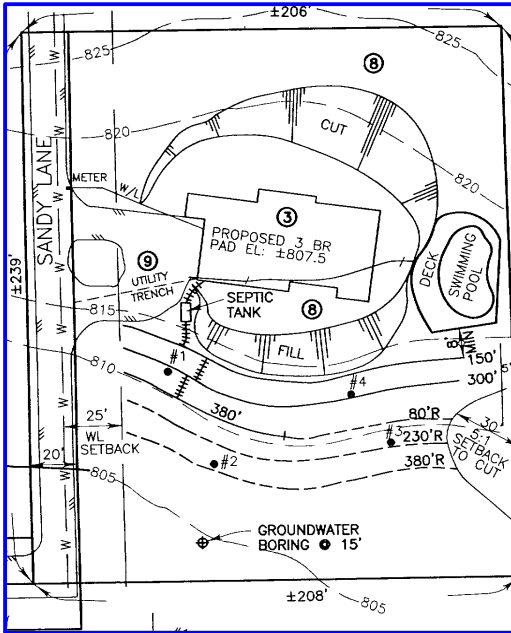
4. Typically, local land use agencies will require submission of the DEH Approval Sheet before any grading or building permits are issued.

Some projects will require local grading permits and some will not. Requirements for grading permits in the unincorporated area of the County are discussed briefly below. *Approved layouts and OSWS permits are not grading permits.*

5. Before a permit to construct the OSWS can be issued, the applicant must provide County DEH proof that a potable water supply is available for the project.

6. Building plans, bearing the appropriate stamp which documents plan submittal to the local land use agency, must be submitted to County DEH. The plans need not be approved by the local land use agency before being submitted to County DEH, but any significant plan amendments should be provided to DEH. County DEH will review these plans to ensure that they correspond to the project described in the approved Layout Design.
7. If the local land use agency does not require a grading permit, and the requirements set out above have been met, a permit to construct the OSWS will be issued. This permit expires after one year.
8. If the local land use agency requires submission of a grading plan, and that plan was not submitted to DEH with the Layout Design, the grading plan must be submitted to DEH for review and approval before grading actually begins. DEH will review the grading plan to verify that it is in agreement with the approved Layout Design.
9. If the Approval Sheet for the Layout Design indicates that a field check of complete grading is required, that field check must be completed before a permit to construct the OSWS is issued. If the completed grading is checked and corresponds to the approved layout, and the other requirements above have been met, a permit to construct the OSWS will be issued. This permit expires after one year.
10. Once the permit to construct the OSWS, has been obtained, the OSWS can be installed. The system must be inspected by County DEH before the system is backfilled. If that inspection is satisfactory, DEH will sign off on ("final") the OSWS permit (Occasionally DEH will withhold final approval on the OSWS permit pending specific conditions to be met.).
11. In the unincorporated parts of the County, if a building permit relies on an OSWS, County land use agencies will require DEH approval of a layout design and a valid permit to construct the OSWS before building plans are approved or a building permit is issued. Other local land use agencies also typically require that a permit to construct the OSWS be issued before building plans will be approved or a building permit issued.
12. Local land use agencies typically require that the OSWS inspection be completed and the OSWS permit be made final by DEH before occupancy permits are issued.

The Layout Design



A layout design of the proposed building construction and onsite wastewater system is required. This drawing should be prepared using standard engineer's scale on 8 1/2" x 11" or 11"X17" size paper. The basis for the OSWS design will be from percolation testing data and/or conditions of approval from a recorded subdivision map, parcel map, boundary adjustment, or certificate of compliance. The size of the onsite wastewater system is a function of the number of bedrooms or dwellings and the percolation rate of the soil on the site.

The layout design should contain the following information:

1. Site Address
2. Tax Assessor's Parcel Number
3. Owner's Name, mailing address, and phone number
4. Consultant's name, mailing address, and phone number
5. Type of proposed construction (number of bedrooms for home)
6. Legal Basis of parcel (map and lot number)
7. Vicinity Map, Scale, North arrow
8. Property Lines and lot dimensions
9. Topographical lines and elevation points
10. Proposed OSWS design detail
11. Proposed grading with 5:1 setbacks shown along with any impacts/influence to adjacent property
12. All known, recorded easements on or within 20 feet of lot boundaries (open-space, utility, road, waterline, etc.)
13. Any soils testing information, such as deep borings or percolation tests, plotted on the design

The layout or percolation test design approval is valid for one year. The soils testing data does not expire and will be valid in the use of the system design, unless site conditions change. If a site review reveals any evidence of groundwater changes, including but not limited to; plant growth, ponding water, new information on adjacent lots or OSWS failures in the area, additional groundwater test borings may be required. DEH staff will specify the depth and the locations of the additional test borings in consultation with project environmental health specialists, engineers and/or geologists.

- If groundwater is observed in the borings and/or DEH has reason to believe that groundwater could rise to an unacceptable level during the course of a normal rainfall season, a permit will not be issued and monitoring may be required. Monitoring must be conducted during the course of a normal rainfall year when full groundwater recharge has occurred.
- The environmental health specialist, engineer or geologist must support their express conclusion that the highest historic groundwater elevation will not encroach upon the 5-foot minimum separation between the bottom of the proposed OSWS. The supporting data shall include, but not be limited to, data on the sites topography, soils, geology, basin studies, hydro geologic studies, and groundwater-monitoring data from the on-site and off site observation wells through a normal rainfall year.¹

Information on the layout shall also include the septic certification found in one of the following documents: Recorded Map, Parcel Map, Division of Land Plat, Boundary Adjustment, Certificate of Compliance, approved Percolation Test or a Layout with a waiver of percolation testing. ***The certification provided on the legal description does not ensure the lot can be approved for development base on the use of an on-site wastewater system. It only provides a basis on which to size the on-site wastewater system.*** A previously approved, valid layout must reflect the current proposed development of the parcel including dwelling size and location, grading and any recent off-site impacts that may affect septic system siting; otherwise, a field review will be required.

Reserve Area Requirements

All OSWS design proposals, for both new construction and additions to an existing structure, must show 100% reserve area for the active OSWS unless the percolation rates require more than 100% reserve area. Refer to the leach line footage charts on accompanying pages.

1 to 60 MPI:	100% Reserve Area	no minimum lot size for existing lots
61 to 90 MPI:	200% Reserve Area	3.0 acre minimum lot size required
91 to 120 MPI:	300% Reserve Area	5.0 acre minimum lot size required

Note: Percolation rates in excess of 120 minutes per inch demonstrate impermeable soil that would not be considered suitable for an OSWS*.

Septic Tank Sizing Requirements for One Dwelling

DEH recommends that you always size your septic system to accommodate one additional bedroom and that a septic tank effluent filter be installed on the outlet side of the septic tank. The minimum size septic tank is 1,000 gallons for 1 to 3 bedrooms, 1,200 gallons for 4 bedrooms and 1,500 gallons for 5 or 6 bedrooms. This does not apply to second dwellings, which may require an additional septic tank and separate leach field. The layout approval is the approval of the design for the on-site wastewater system and is *not* the permit for the installation.

¹ For more information in regards to groundwater see DEH [On-Site Wastewater System Groundwater Policy](#)

Second Dwelling Septic Tank Sizing

Since each dwelling can have a kitchen with a dishwasher and garbage disposal, along with a laundry facility, second dwellings are not comparable to an additional bedroom when calculating the size of an OSWS. If a common system is used for both the main house and the second dwelling, the tank size must be calculated as separate flows for each dwelling, even if a common septic tank is used. The requirements will be as follows:

Main Dwelling	Second Dwelling	Minimum Tank Size
1 BR	1 BR	1000 Gallons
2 BR	1 BR	1200 Gallons
2 BR	2 BR	1500 Gallons
3 BR	1 BR	1500 Gallons
3 BR	2 BR	1500 Gallons
4 BR	1 BR	1500 Gallons
4 BR	2 BR	2000 Gallons

Dwellings larger than the above will require oversized or battery-type tanks, if a common system is being proposed. Separate tanks for each dwelling could be used even if connected to a common disposal field.

Setbacks:

Setbacks in layout designs refer to the required spacing in distance from components of the sewage disposal system and to structures, property lines, easements, watercourses, wells, or grading. Specific setback requirements will vary based on the type of system design and site conditions. These are:

System Component	Setback To:	Minimum Distance
Septic Tank	Structure	5 feet
Septic Tank	Property Line	5 feet
Septic Tank	Water Well	100 feet
Leach Lines	Structure	8 feet
Leach Lines	Property Line	5 feet
Leach Lines	Water Lines (Public)	25 feet from edge of easement (a)
Leach Lines	Water Well	100 feet (d)
Leach Lines	Drainage Course	50 feet from top of bank
Leach Lines	Flowing Stream	100 feet from top of bank
Leach Lines	Pond	100 feet from spillway elev.
Leach Lines	Reservoir	500 feet to 1000 feet based on average slope
Leach Lines	Aqueduct	100 feet from edge of easement (c)
Leach Lines	Road Easements	8 feet from edge of ultimate easement width (b)

Leach Lines	Cut Slopes	5:1 Setback from top of cut slope (e)
Leach Lines	Septic Tank	5 feet
Leach Lines	Leach Lines	10 feet
Leach Lines	Seepage Pits	15 feet
Seepage Pits	Structure	10 feet
Seepage Pits	Property Line	10 feet
Seepage Pits	Water Lines (Public)	25 feet from edge of easement (a)
Seepage Pits	Water Well	150 feet (d)
Seepage Pits	Drainage Course	50 feet from top of bank
Seepage Pits	Flowing Stream	100 feet from top of bank
Seepage Pits	Pond	100 feet from spillway elev.
Seepage Pits	Reservoir	500 feet to 1000 feet based on average slope measurements
Seepage Pits	Aqueduct	100 feet from edge of easement (c)
Seepage Pits	Road Easements	10 feet from edge of ultimate easement width (b)
Seepage Pits	Cut Slopes	5:1 Setback from top of cut slope (e)
Seepage Pits	Septic Tank	5 feet
Seepage Pits	Seepage Pits	20 feet

- (a) The setback to a domestic water line may increase if the 5:1 setback of the utility trench depth exceeds the 25-ft setback.
- (b) The setback may increase if the 5:1 setbacks to road cuts are greater than the minimum setback of 8 feet.
- (c) Any reduction in the Aqueduct setback requires approval from the San Diego County Water Authority or other purveyor, if another district.
- (d) The minimum setback may be increased if site conditions show the minimum setback is insufficient to protect groundwater supplies.
- (e) No part of an on-site wastewater system, with the exception of a septic tank, pump chamber, enclosed filter, or tight sewer pipe, shall be located closer than a 5:1 setback distance to the top of a cut bank, or the edge of an excavation. The horizontal distance would be five times the height of the cut or depth of the excavation. This setback would also be applied to the top of an eroded bank or natural slope in excess of 60%.

Leach Line Linear Footage Requirements

The charts located at the end of this policy show the corresponding length of leach line as a function of percolation rate and the number of bedrooms for a single-family dwelling. *The one-bedroom design lengths correspond to 2nd dwelling systems on a shared system with the main house or its own system.

Seepage Pits

Seepage Pits will require full percolation testing by a licensed civil engineer, registered geologist, or registered environmental health specialist.

- Horizontal seepage pits cannot be used if percolation rates exceed 30 minutes per inch.
- Vertical seepage pits are restricted to coastal sedimentary basins that have saltwater intrusion into the groundwater with TDS levels in excess of 1500 ppm.
- Desert seepage pits are used in the Anza Borrego Desert, and percolation testing is generally waived.

Grading Plan Review

Upon approval of a layout by DEH, the Specialist will write in the grading line on the approval form indicating whether a field check of completed grading is required prior to issuance of a septic tank permit. Keep in mind that DEH grading approval is not the same as local land use agency grading approval. For the unincorporated parts of the County, some small projects may not require grading permits. For other projects, County land use agencies issue the following kinds of grading permits:

- **Minor Grading:** Processed through the DPLU, Building Division. Please see the Grading Plan Checklist (DPLU: BLDG-009, Rev. 1-99). Phone: (858) 565-5920.
- **Major Grading:** Processed through the Department of Public Works, Land Development Division, Grading Improvements. Please see Major Grading Plan Checklist. Phone: (858) 694-3281.

Minor and/or major grading plans will be reviewed by DEH prior to grading to determine impacts to the approved on-site wastewater system and adjacent properties. After completion of the grading, the appropriate DEH field office must be contacted to arrange for a field check, unless the field check is waived on the layout approval.

Building Plan Review

The DEH recommends that you obtain approval of your on-site wastewater system prior to expending funds for a final set of architectural plans for your home. Plans for a new or second dwelling must be submitted to the DPLU, Building Division at the Ruffin Road office for processing and approval. Upon approval of the plans, the owner/agent may hand carry the plans to the DEH counter at any of the DEH field offices for a verification of bedrooms and plot plan concurrence with the approved layout. Bedrooms are used to determine the potential occupancy of a dwelling and therefore the potential amount of wastewater that will be generated. Libraries, dens, sewing rooms, recreation rooms and similar rooms may be counted as bedrooms unless the entrance wall is greater than 50% open or other means which eliminate privacy. The presence of a closet is not a determining factor for a bedroom.

Potable Water Supply

DEH will require proof of potable water supply. A municipal water supply should be confirmed with proof of a meter connection. A domestic water well will require proof of potability. Provide a copy of the Well Laboratory Report that indicates the absence of bacteria and nitrate contamination of less than 10 mg/l of Nitrate-N or 45 mg/l of nitrate. The date of the test cannot be more than 3 years old. If a valid test does not exist, the well must be sampled for bacteriological and nitrate levels. Samples may be obtained by one of two methods:

- **DEH Sample:**

For new wells, DEH will provide sterile sample bottles with instructions on how to prepare the well for use and how to take the sample. Delivered water samples are accepted Mondays and Tuesdays each week and sent to the Public Health Laboratory for processing. There is no charge to process the first sample, if the request is made within one year of well application approval.

For existing wells, the owner/agent can take the sample and bring to a DEH field office after paying a \$40.00 fee and obtaining the sample kit and instructions.

- **Certified Laboratory Sample:**

This Department will accept water sample analysis results from any State-certified laboratory for the purposes of issuing permits. Contact any of the DEH Land and Water Quality offices (listed on the top of the first page on this policy) for a list of certified laboratories.

When all applicable items above have been completed to the satisfaction of this Department, a septic tank permit can be issued to the owner/agent or to a contractor with the required license(s) from any of the above-listed DEH offices. The permit is valid for one year

In order to make septic tank permit processing as smooth as possible, it is recommended that you maintain a record of all paperwork and project control numbers obtained from each Department

Definitions

Absorption Area:	The amount of land area required to treat a daily discharge of sewage based on percolation rate and design flow, described in square feet.
Aqueduct:	An easement used for municipal water pipelines by the San Diego County Water Authority and the Metropolitan Water Authority.
Bedroom:	A habitable room totaling at least seventy (70) square feet in size, considered suitable for sleeping purposes,

	regardless of whether or not the room contains or has access to a closet and a full or $\frac{3}{4}$ bathroom, and does not directly open to a garage or other bedroom.
Chamber System:	A leach field design that uses a plastic chamber instead of perforated pipe and rock in the excavation.
Circulation Element:	A public road that has been designated by the Department of Public Works as a major traffic collector.
Cut Bank:	The vertical distance across of the face of graded slope where soil has been removed.
Daily Sewage Flow:	The amount of sewage generated in a 24-hr period,
Drainage Course:	A seasonal stream, eroded channel, lined drainage channel, swale, gully, ravine, dry creek bed, etc.
Easement:	A recorded section of land used for specific purpose or restricted from development such as utilities, roadways, water mains, open-space, drainage, etc.
5:1 Setback:	A horizontal distance 5 times the height of a cut bank, or depth of an excavation to an OSWS located up gradient.
Groundwater:	Subsurface water present in the upper soil zones, in the void spaces between soil particles, between confining soil layers, and in aquifers.
Health Dept. Certification:	The sizing requirements for an OSWS established by a previously approved percolation test, recorded land division plat, recorded parcel map, recorded subdivision, boundary adjustment, or certificate of compliance.
Holding Tank:	A temporary sewage disposal system that consists of a 1500 gallon septic tank, alarm system, and maintenance contract. Intended for a short duration until an approved sewer is installed.
Horizontal Seepage Pit:	A component of a sewage disposal system that consist of pre-cast concrete rings within an excavation typically 5-feet wide, and 8-feet deep. Percolation rates cannot exceed 30 minutes per inch.
Leach Line:	A component of a sewage disposal system that consist of an 18-inch wide trench, 3 to 5 feet deep, with perforated leach line pipe suspended over a bed of 1.5-inch diameter rock.

Percolation Rate:	The amount of time it takes water to be absorbed into the soil within a test boring under controlled, saturated conditions and described in minutes per inch.
Pump Chamber:	Typically a modified septic tank used to contain the pump system for a non-gravity sewage disposal system.
Reserve Area:	Area available to replace the active disposal field design. Average percolation rates of 60 minutes per inch or less require 100% reserve area. Percolation rates from 61 to 90 minutes per inch require 200% reserve area. Percolation rates from 91 to 120 minutes per inch require 300% reserve area. Percolation rates greater than 120 minutes per inch are not considered permeable soil.
Septic Tank:	Used to settle and separate the solids and sewage effluent. Only partial sewage treatment occurs within the septic tank, and the sewage effluent leaving the tank still contains pathogens.
Surge Tank:	Receives sewage effluent from the pump chamber to allow gravity-flow into the leach field or seepage pit in a non-gravity system.
<i>Vertical Seepage Pit:</i>	A component of a sewage disposal system that is used in coastal, sedimentary basins that are degraded by salt water. Vertical seepage pits must maintain the same separation to groundwater as other conventional designs. Vertical seepage pits are restricted from inland, granitic basins where groundwater is used for a drinking water resource.

DISPOSAL TRENCH LENGTH BASED ON PERCOLATION TEST RESULTS

Percolation Rate Average Time in Minutes/Inch (MPI) Number of Bedrooms							Percolation Rate Average Time in Minutes/Inch (MPI) Number of Bedrooms						
MPI	1*	2	3	4	5	6	MPI	1*	2	3	4	5	6
1	200	200	240	270	280	300	41	310	385	460	520	575	635
2	200	200	240	270	280	300	42	310	390	470	530	585	645
3	200	200	240	270	280	300	43	310	390	470	530	585	645
4	200	220	260	290	300	310	44	310	395	480	540	595	655
5	200	240	290	320	320	340	45	320	400	480	540	595	655
6	200	250	300	340	350	360	46	320	400	480	540	595	655
7	210	260	310	350	370	380	47	320	405	490	550	605	665
8	210	265	320	360	390	400	48	330	410	490	550	605	665
9	220	270	320	360	400	410	49	330	410	500	560	615	675
10	220	275	330	370	410	420	50	330	415	500	560	615	675
11	220	280	340	380	420	430	51	340	420	500	560	615	675
12	230	285	340	380	430	440	52	340	420	510	570	625	685
13	230	290	350	390	430	450	53	340	425	510	580	635	695
14	235	295	350	400	440	460	54	340	430	520	580	635	695
15	240	300	360	400	450	470	55	340	430	520	580	635	695
16	240	300	360	410	450	490	56	350	435	520	590	645	705
17	240	305	370	410	460	500	57	350	440	530	590	645	705
18	250	310	370	420	460	510	58	350	440	530	600	655	715
19	250	310	380	420	470	520	59	350	445	540	600	655	715
20	250	315	380	430	470	520	60	360	450	540	610	665	725
21	260	320	380	430	480	530	61	370	460	550	620	690	740
22	260	320	390	440	480	530	62	380	470	560	630	680	720
23	260	325	390	440	490	550	63	390	480	570	640	690	730
24	260	330	400	450	500	560	64	400	490	580	650	700	740
25	260	330	400	450	500	560	65	420	500	580	660	710	750
26	270	335	400	450	510	570	66	420	510	600	670	720	760
27	270	340	410	460	515	575	67	430	520	610	680	730	770
28	270	340	410	460	515	575	68	440	530	620	690	740	780
29	270	345	420	470	525	585	69	450	540	630	700	750	790
30	280	350	420	470	525	585	70	460	550	640	710	760	800
31	280	350	420	480	535	595	71	470	560	650	720	770	810
32	280	355	430	480	535	595	72	480	570	660	730	780	820
33	290	360	430	490	545	605	73	490	580	670	740	790	830
34	290	360	440	490	545	605	74	500	590	680	750	800	840
35	290	365	440	500	555	615	75	510	600	690	760	810	850
36	300	370	440	500	555	615	76	520	610	700	770	820	860
37	300	370	450	500	555	615	77	530	620	710	780	830	870
38	300	375	450	510	565	625	78	540	630	720	790	840	880
39	300	380	460	510	565	625	79	550	640	730	800	850	890
40	300	380	460	520	575	635	80	560	650	740	810	860	900

Percolation Rate Average**Time in Minutes/Inch (MPI)
Number of Bedrooms**

MPI	2	3	4	5	6
81	660	750	820	870	910
82	670	760	830	880	920
83	680	770	840	890	930
84	690	780	850	900	940
85	700	790	860	910	950
86	710	800	870	920	960
87	720	810	880	930	970
88	730	820	890	940	980
89	740	830	900	950	990
90	755	845	915	965	1005
91	770	860	930	980	1020
92	785	875	945	995	1035
93	800	890	960	1010	1050
94	815	905	975	1025	1065
95	830	920	990	1040	1080
96	845	935	1005	1055	1095
97	860	950	1020	1070	1110
98	875	965	1035	1085	1125
99	890	980	1050	1100	1140
100	905	995	1065	1115	1155
101	920	1010	1080	1130	1170
102	935	1025	1095	1145	1185
103	950	1040	1110	1160	1200
104	965	1055	1125	1175	1215
105	980	1070	1140	1190	1230
106	995	1085	1155	1205	1245
107	1010	1100	1170	1220	1260
108	1025	1115	1185	1230	1270
109	1040	1130	1200	1250	1290
110	1055	1145	1215	1265	1305
111	1070	1160	1230	1280	1320
112	1085	1175	1245	1295	1335
113	1100	1190	1260	1310	1350
114	1115	1205	1275	1325	1365
115	1130	1220	1290	1340	1380
116	1145	1235	1305	1355	1395
117	1160	1250	1320	1370	1410
118	1175	1265	1335	1385	1425
119	1190	1280	1350	1390	1440
120	1210	1300	1370	1420	1460